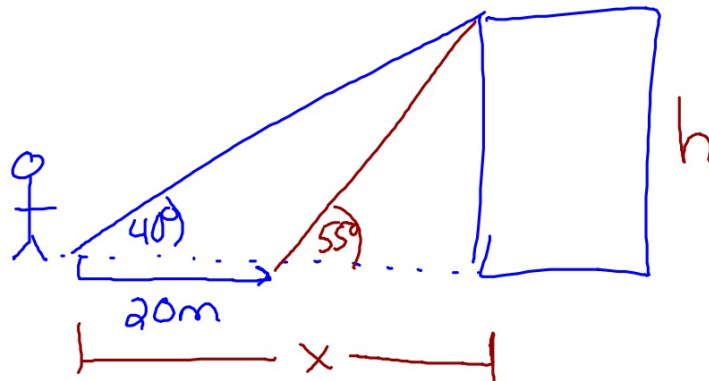


#10



$$\tan 40 = \frac{h}{x} \quad \tan 55 = \frac{h}{x-20}$$

$$x \tan 40 = h$$

$$x = \frac{h}{\tan 40}$$

$$(x-20) \tan 55 = h$$

$$x \tan 55 - 20 \tan 55 = h$$

$$x \tan 55 = h + 20 \tan 55$$

$$x = \frac{h + 20 \tan 55}{\tan 55}$$

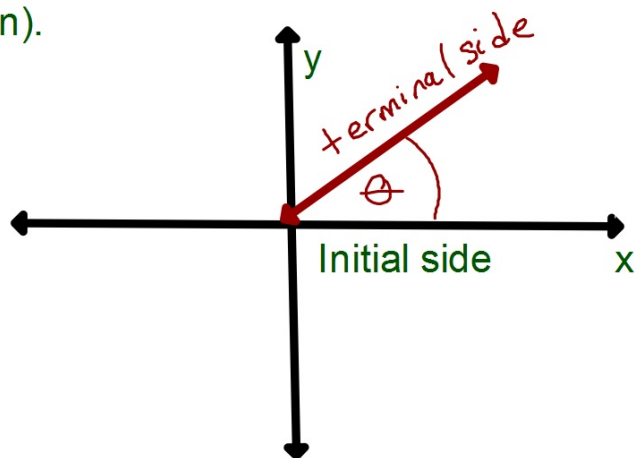
$$x = \frac{h}{\tan 55} + 20$$

$$\frac{h}{\tan 40} = \frac{h}{\tan 55} + 20$$

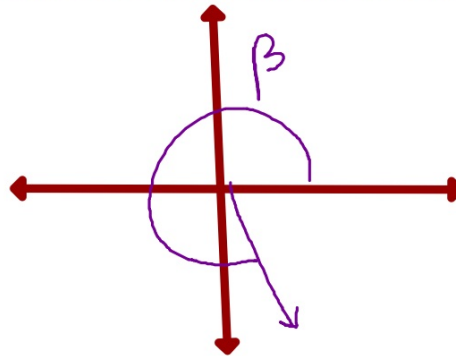
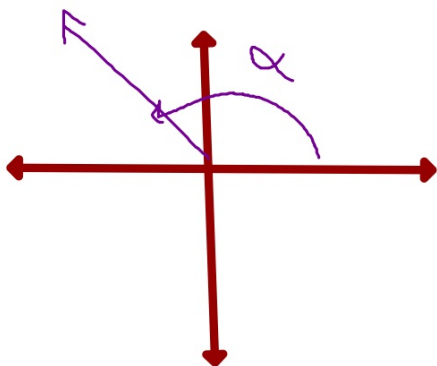
$$h = \frac{h \tan 40}{\tan 55} + 20 \tan 40$$

11.3 Using the coordinate axes in trigonometry

θ = angle on the coordinate axes who vertex is on the origin (Standard Position).

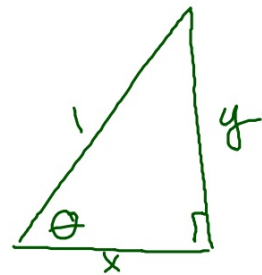
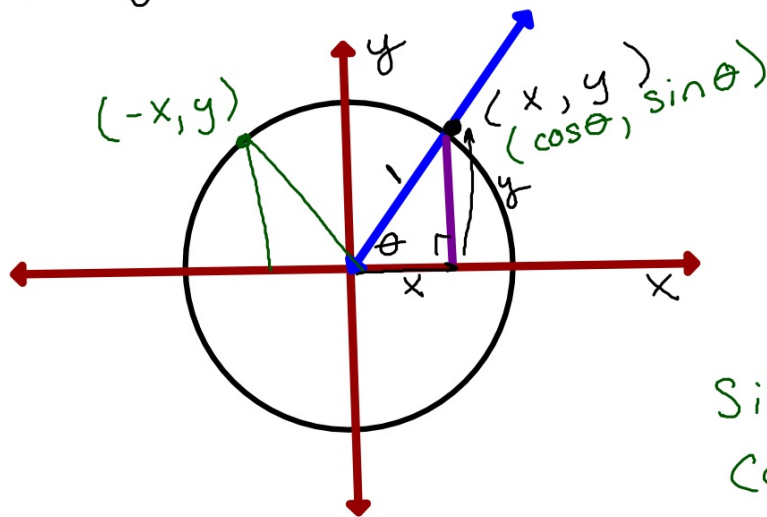


A positive angle is measured counterclockwise from the x-axis



Unit Circle

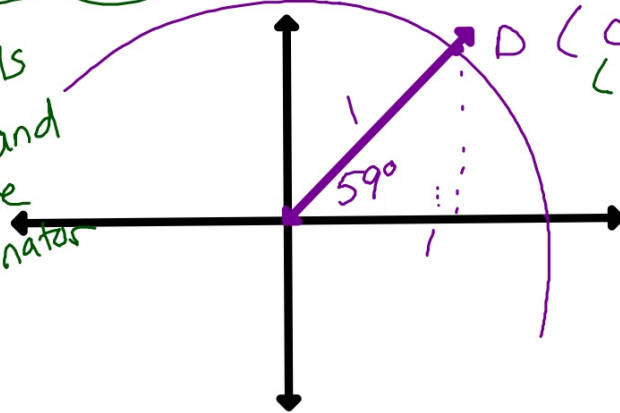
$x^2 + y^2 = 1$ (Circle with radius 1)



$$\sin \theta = \frac{y}{1} = y$$
$$\cos \theta = \frac{x}{1} = x$$

Ex: Find the exact coordinates of point D, to 3 sf

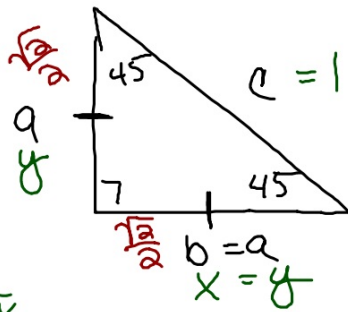
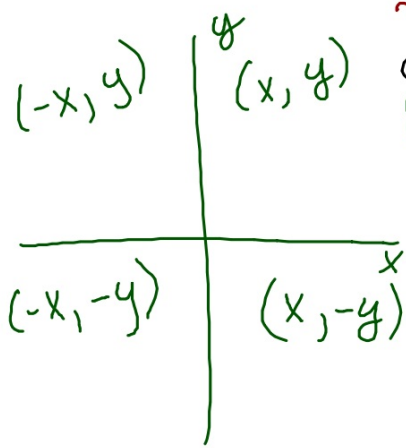
From now on
no decimals
simplify and
rationalize
denominator



$D (\cos 59, \sin 59)$
 $(0.515, 0.857)$

- Side Trip: special right triangles -
 $30^\circ-60^\circ-90^\circ$
 $45^\circ-45^\circ-90^\circ$

Recall: 45-45-90



$$a^2 + a^2 = c^2$$

$$2a^2 = c^2$$

$$a^2 = \frac{1}{2}c^2$$

Unit circle

$$x^2 + y^2 = 1$$

$$2y^2 = 1$$

$$y^2 = \frac{1}{2}$$

$$y = \pm \frac{1}{\sqrt{2}} = \pm \frac{\sqrt{2}}{2}$$

